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ABSTRACT

The study dealt with the personality structure of Puerto Rican junior and senior high school students examined in one school district in Puerto Rico. The instrument used was a translated and adapted form of the HSPQ, Form A. From a scree test, more than 14 factors, probably 16 factors were to be found in the data. Rotating 14 factors to an oblique promax solution allows four HSPQ Factors (B, D, H, and I) to be matched to promax factors. Using a factor mandate it was possible to rotate to a moderately good fit of the 14 HSPQ factors. In only one case (Factor O) was the Coefficient of Congruence higher off the major diagonal than on it. Factors B, Intelligence and I, Esthetic Sensitivity were especially well matched. However, when the correlations among these oblique factors were examined, essentially no similarity appeared between the Puerto Rican date and the factor intercorrelations appearing in the HSPQ Handbook. Examination of the mean raw scores for the Puerto Rican students as contrasted to the Handbook reports for American and British students indicates that Puerto Ricans are more like the Americans than like the British, and are generally less Excitable, less Dominant, Less Enthusiastic, more Esthetically Sensitive, less Individualistic, less Guilt-Prone, and have greater Will-power than either the American or the British samples. (Author)

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ASSESSING THE PERSONALITY STRUCTURE OF THE PUERTO RICAN SECONDARY SCHOOL STUDENT

John P. Poggio and Ronald L. Nuttall

Boston College

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Introduction

"... Granted the general premise of a certain universality in the laws of human nature, the more basic personality traits (such as have been sought in the factor analysis of the personality sphere) might be expected to be among those that better retain their form recognizably across cultures." (Cattell & Tsujioka, 1965). With this statement acting as a general assumption, or more often a research hypothesis, personality questionnaires originally developed and normed for members of English speaking Western society are being translated into different languages where applicable and used to study cross-cultural differences and similarities in personality structure. Eventually, dependent upon their psychometric properties and validities in the new culture these translated and adapted instruments come into their own and are employed to the same ends in the new culture as their parent instruments were in the originating culture.

Representative of this pattern are the family of personality questionnaires developed by Cattell and his co-workers. These instruments span the age range from childhood (CPQ) to adult (16-PF). In the present study the High School Personality Questionnaire (HSPQ) in its 1969 version was the focus. The HSPQ was designed to be used by seventh to twelfth grade students. Fourteen independent, but correlated factors are measured by the instrument. The names and descriptions of the 14 factors of the HSPQ are presented in Table 1.

Table 1

Factor Names and Descriptions for 14 Factors of the Cattell High School Personality Questionnaire

Factor	Low Score	Factor Name	High Score
A		SOCIABILITY	
	RESERVED, Detached, Critical, Cool		OUTGOING, Warmhearted, Easygoing, Participating
B		INTELLIGENCE	
	LESS INTELLIGENT, Concrete-Thinking, of lower scholastic mental capacity		MORE INTELLIGENT, Abstract-Thinking, Bright, of higher scholastic mental capacity
C		EGO-STRENGTH	
	AFFECTED BY FEELINGS, Emotionally less stable, Easily upset, Changeable, of lower Ego Strength		EMOTIONALLY STABLE, Faces Reality, Calm of higher Ego Strength
D		EXCITABILITY	
	PHLEGMATIC, Deliberate, Inactive, Stodgy		EXCITABLE, Impatient, Demanding, Overactive
E		DOMINANCE	
	OBEDIENT, Mild, Conforming, Submissive		ASSERTIVE, Independent, Aggressive, Stubborn, Dominant
F		ENTHUSIASM	
	SOBER, Prudent, Serious, Taciturn		HAPPY-GO-LUCKY, Gay, Enthusiastic, Impulsively Lively
G		CONSCIENTIOUSNESS	
	EXPEDIENT, Evades Rules, Feels few obligations, Has weaker Superego Strength		CONSCIENTIOUSNESS, Persevering, Staid, Rule-Bound, Has stronger Superego Strength

Table 1 (Continued)

Factor	Factor Name	
	Low Score	High Score
H	THICK-SKINNEDNESS	
	SHY, Restrained, Diffident, Timid	VENTURESOME, Socially Bold, Uninhibited, Spontaneous
I	ESTHETIC SENSITIVITY	
	TOUGH-MINDED, Self-Reliant, Realistic, No-Nonsense	TENDER-MINDED, Dependent, Over-Protected, Sensitive
J	INDIVIDUALISTIC	
	VIGOROUS, Goes Readily with the group, Zestful, Given to action	DOUBTING, Obstructive, Individualistic, Internally Restrained, Unwilling to act
O	GUILT-PRONENESS	
	PLACID, Confident, Serene, Untroubled	APPREHENSIVE, Worrying, Depressive, Troubled, Guilt Prone
Q_2	SELF-SUFFICIENCY	
	GROUP-DEPENDENT, A "Joiner" and sound follower	SELF-SUFFICIENT, Prefers own decisions, Resourceful
Q_3	WILLPOWER	
	UNDISCIPLINED SELF-CONFLICT, Careless of Protocol, Follows own Urges, has low Integration	CONTROLLED, Socially-Precise, Self-Disciplined, Compulsive, has high self-concept control
Q_4	TENSION	
	RELAXED, Tranquil, Torpid, Unfrustrated	TENSE, Driven, Overwrought, Frustrated

There exists a considerable body of research attempting to identify cultural patterns and cultural differences using the various forms of the Cattell family of personality instruments. Cross-cultural comparisons have been made of American, French, British, Italian, Scottish, Australian, Japanese, Swiss, and German samples (see Cattell, 1958; Royo, 1967, Warburton, 1961; Meschieri, 1965; McQuaid, 1967; Gibb, 1961; Tsujioka & Cattell, 1965; and Van de Geer, 1964). In these studies the clear verdict has been that at the primary factor level a high degree of similarity of personality structure exists among these countries and cultures. Such factors as A, B, C, E, F, G, and H manifest themselves with patterns which show no demonstrably significant differences from one culture to another.

The primary finding is one of essential similarity or consistency of the basic personality structure as measured by Cattell's instrument. The secondary finding is that despite the foregoing, there <u>are</u> interesting and apparently significant differences of expression (factor loadings) on certain variables and significant differences on the factor levels. For example, McQuaid (1967) in research comparing Scottish and American children found that while the HSPQ did measure anxiety and introversion in Scottish children, in comparison to American children, the Scottish children tended to be more anxious and less introverted. McQuaid's results were supportive of an earlier study by Cattell and Warburton (1961). Many other examples could be cited where the underlying dimensions were found to exist in two or more cultures, but the mean scores for the cultures on specific traits differ significantly (see Meredith, 1965; Tsujioka & Cattell, 1965; Butcher, Ainsworth, & Nesbitt, 1963; and Royo, 1967).

With these findings in mind, the present study used a translated and adapted Puerto Rican version of the HSPQ and examined the replicability of Cattell's 14 factors using factor analytic techniques. It was expected that certain differences between the Spanish speaking Puerto Ricans and the English speaking norm group of Cattell would appear. Previous work had indicated that, compared to continentals, Puerto Rican high school students are more Authoritarian (Nuttall & Nuttall, 1969).

Method

Sample. The data for the present research came from a large sample of students attending high school and junior high school in the Bayamón Norte school district in Puerto Rico. During the time of this study (Spring, 1968) there were some 6,712 students enrolled in the six public schools and three private schools serving the district at the high school and junior high school level. Of these 4,672 or 71 percent answered the HSPQ instrument. Students not answering this instrument were usually not attending school on the day the questionnaire was administered.

Instrument. The HSPQ is available in four forms, A, B, C, and D. The 1969 version of form A (Cattell & Cattell, 1969) was adapted to Puerto Rican culture and translated for the present research. The instrument was adapted and translated by a team made up of a Puerto Rican school psychologist and a Puerto Rican social worker.

The instrument itself has 142 items, ten items for each of 14 scales and two check items. For all factors except Factor B, there were five positive and five negative items. Each item has three response

alternatives, a, b, and c. Positive items are scored 0, 1, and 2 respectively while negative items are scored 2, 1, and 0 respectively. Thus for these 13 factors the scores can range from zero to 20. Factor B is meant to measure intelligence so each item has one correct and two incorrect answers. The correct answer is scored 1, the incorrect 0, thus giving a score range from zero to ten for this factor.

Administration. The HSPQ Form A was administered in the Spring of 1968 as part of a larger study of the factors affecting academic achievement conducted under the auspices of the Department of Education, Commonwealth of Puerto Rico. This study was directed by one of the authors (RLN).

The HSPQ was administered in the student's home room in groups. On the average junior high school students needed 32 minutes to complete the instrument while high school students needed an average of 30 minutes.

Procedure and Analysis. Using the data from the 4,782 high and junior high school students the 140 items of the HSPQ Form A and two additional items, sex and grade level, were intercorrelated. This 142 by 142 product moment correlation matrix was then subjected to a principal components analysis. An analysis of the number of roots was undertaken, but it was decided to use 14 factors since the original HSPQ was designed to measure 14 factors.

Assuming 14 factors, the correlation matrix was then subjected to an iterative principal factor solution. This solution was then rotated to a varimax and to a promax criterion. The varimax solution was used as the starting point for rotating to a factor mandate determined

by the scoring matrix. This procedure is described by Horst (1965, pp. 397-401). Briefly a hypothesis or factor mandate matrix is constructed with +1 values where a given item should load positively on a given factor, -1 values where a given item should load negatively and 0 where an item should not load. Through a series of matrix algebra operations the arbitrary orthogonal (in this case varimax) solution is rotated to an oblique structure matching as near as possible the factor mandate matrix.

The test of the fit between the resultant oblique factor structure and the factor mandate was then measured using Burt's Coefficient of Congruence (Harman, 1967, pp. 269-272). The intercorrelations among the oblique factors were then obtained and compared with those given in the Cattell & Cattell Handbook on the HSPQ (1969, p. 84).

After the factor structure had been examined, the means of the conventionally scored HSPQ factors were examined in the Puerto Rican sample and compared with the means in the continental American normative groups.

Almost all of the analyses used in this study were conducted using the P-STAT system, a user-oriented language, implemented on the IBM 360, for statistical analysis and file management of social science data. The author of the P-STAT system is Roald Buhler of the Princeton University Computing Center. Some of the analyses, particularly the factor analyses were conducted on the IBM 360/91 at Princeton University, while other parts were conducted on the IBM 360/40 at Boston College.

Results

The first question was the number of roots present in the correlation matrix. A scree test (Cattell, 1966) was done using the first 73 principal component roots. As can be seen in Figure 1, there is a break in the scree line at 16 factors, at 34 factors and at 59 factors. There were 34 factors with roots greater than 1.0. From the construction of the test 14 factors were expected. It was finally decided to use 14 factors rather than a larger number. A principal factor analysis was done assuming 14 factors and iterating until the communalities stabalized. These 14 principal factors were then rotated to oblique promax and to orthogonal varimax criteria.

Since the promax rotation was oblique it was hoped that it would match the HSPQ factor pattern. To test this the NEWFAC program available in P-STAT was used to obtain best linear fit estimates of what the loadings on the scored factors would be on the promax factors. In order to do this a larger correlation matrix, containing the 140 items as well as the 14 scored tests was constructed.

The results of this analysis are presented in Table 2. It will be noted that this procedure produces some predicted loadings greater than 1.00. From this table it is seen that four factors were well matched. HSPQ scored Factor B is promax factor 3, Factor H is the reverse of promax factor 4, Factor I is clearly promax factor 2, and HSPQ Factor D is highly loaded on promax factor 7.

Two Factors (A and J) did not load above .60 on any of the promax factors. The other 8 Factors presented a confusing picture, with high

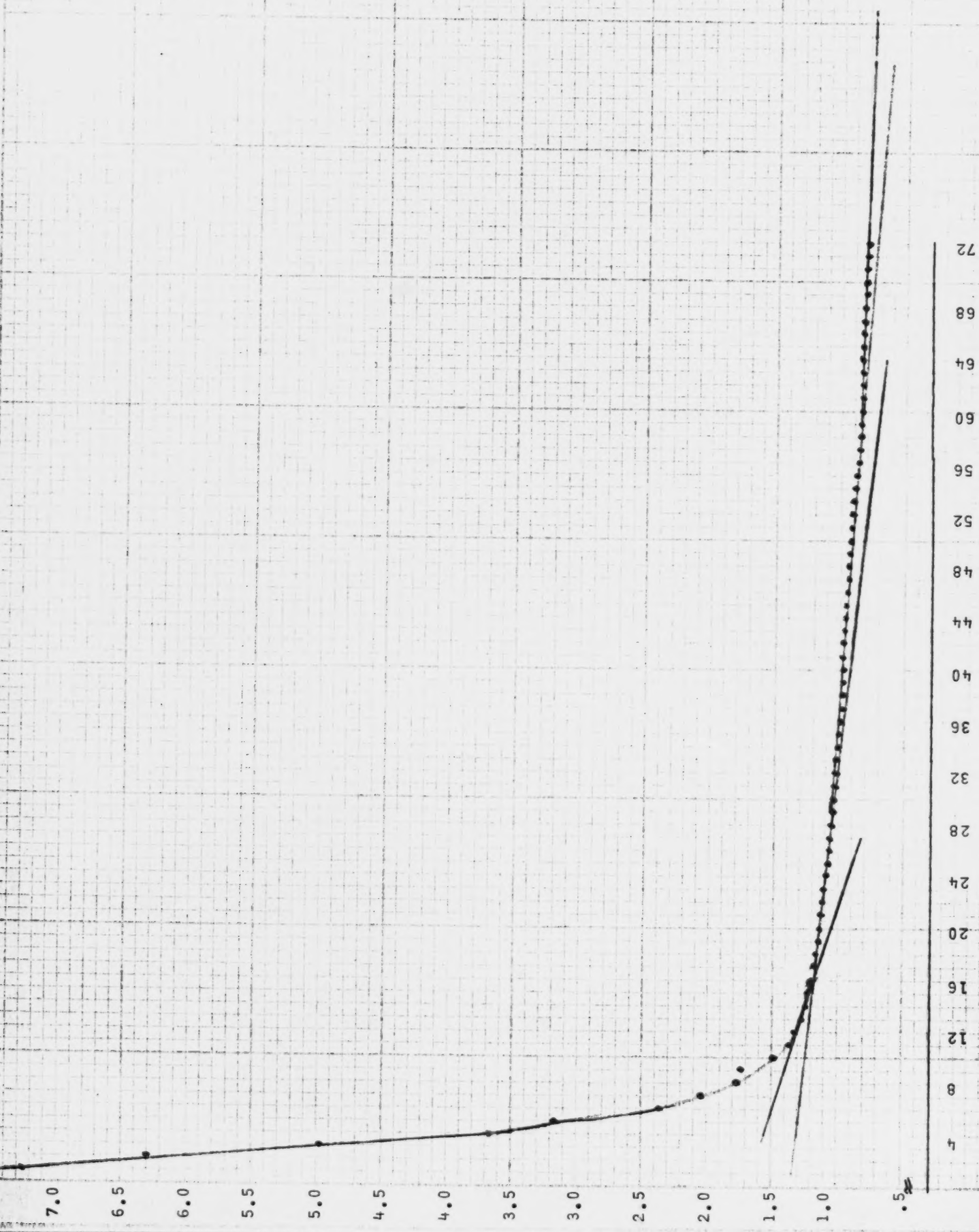

FIGURE 2: Scree Test of Latent Roots on Puerto Rican Data

loadings on more than one promax factor and with a given promax factor having more than one HSPQ Factor loading highly on it.

From this analysis it is evident that while some of the HSPQ Factor structure is replicated using the promax rotation, not all of it is. The fit is especially bad for Factors A and J.

A similar NEWFAC procedure was used to estimate the loadings of the HSPQ second order factors on the promax rotation. The second order factor Conformity loaded an estimated 1.10 on factor 2 and the second order factor Introversion-Extroversion had estimated loadings of -.85 and -.76 on promax factors 4 and 5 respectively.

Since the promax rotation did not completely match the factor pattern expected from the English language version an attempt was made to rotate as closely as possible to this expected pattern. A factor mandate or hypothesis matrix, where items scored positively on a given factor were indicated by +1, those scored negatively were indicated by a -1, and those not expected to load were indicated by 0. Using Horst's method (1965, pp. 397-401) the varimax rotation was rotated to an oblique structure maximally similar to the HSPQ factor mandate. The detailed item loadings are presented in the Appendix while the Coefficients of Congruence between the respective factor mandate vectors (+1, -1, and 0 loadings) and the observed rotated loadings are presented in Table 3.

From this table it can be seen that Factor B, is closely matched, with a coefficient of .72 while Factor I is similarly well replicated with a coefficient of .62. On the whole, 13 of the factors have higher coefficients on the major diagonal than off. Only Factor O is relatively

Table 2

NEWFAC Linear Best Estimates of Loadings of 14 Conventionally Scored HSPQ Factors on 14 Oblique Promax Factors on Puerto Rican Data*

HSPQ Scales	Promax Factors 1	2	3	4	5	6	7	8	9	10	11	12	13	14
A														
B			1.19											
C	.69													
D	-.72						.97							
E		-.75												
F				-.60	-.68						.77			
G						-.72								
H				-.93										
I		1.26												.67
J														
O						.61								
Q_2					.64									
Q_3						-.70								
Q_4	-.72						.62							

* Estimated Factor Loadings less than |.60| are omitted and estimated loadings greater than .90 are underlined.

Table 3

Coefficients of Congruence Between Factor Mandate Vectors and Rotated Factors From Varimax Solution

	Factor Mandate Vectors													
Varimax Factors	A	B	C	D	E	F	G	H	I	J	O	Q_2	Q_3	Q_4
A	48									-32		-40		
B		72												
C			47					35						
D				50										30
E					46				-38					
F						52								
G							52						33	
H			30					55						
I									62					
J	-31									48		30		
O			-38	30							33			
Q_2	-39											50		
Q_3							41						43	
Q_4				30										48

poorly replicated, with a closer match (-.38) with Factor C than with its own Factor O (.33).

All 14 of the diagonal elements are larger in value than .30 and of the 182 coefficients off the major diagonal only 14 were greater than .30. On the other hand, with only two coefficients greater than .60 and only seven above .50 the match cannot be said to be outstanding.

The intercorrelations among the HSPQ Factors as rotated to match the factor mandate were examined and compared with the intercorrelations among the factors as given in the HSPQ Handbook (Cattell & Cattell, 1969, p. 84). These data are presented in Table 4, with the Puerto Rican data above and to the right of the major diagonal, and the continental American data below and to the left of the major diagonal. In general the fit is poor. A check on the signs of the correlations of the respective elements indicated that there were 46 agreements in sign and 45 disagreements in sign between the two matrices. In general then the factor structure in the Puerto Rican data is no more than chance related to the factor structure in the continental Americans. It should be noted that the Puerto Rican data is based on more than 4,782 students at 7th through 12th grades while the HSPQ Handbook data reports on only 168 8th graders.

The means and standard deviations for Male and Female Puerto Rican students are presented in Table 5. The combined group means for each scored HSPQ Factor are contrasted with means reported in the HSPQ Handbook (Cattell & Cattell, 1969, p. 64) for British and American samples in Figure 2. For purposes of the figure, Factor B, Intelligence, scores were doubled, since the Puerto Rican data reports on only Form A, while the figure gives

Table 4

Intercorrelation of HSPQ Puerto Rican Pure Factors, above diagonal compared with HSPQ Normative Data, Table A in Appendix of HSPQ Handbook (Cattell & Cattell, 1969, p.84), below diagonal

	A	B	C	D	E	F	G	H	I	J	O	Q_2	Q_3	Q_4
A		-65	-36	-18	-10	13	16	-27	10	-51	15	-64	-20	15
B	17		38	08	-03	10	-32	41	15	18	-30	11	-06	-21
C	53	10		-26	30	-20	-12	33	-14	18	-80	08	24	-06
D	-12	18	-25		17	06	08	26	10	25	40	00	07	14
E	14	02	08	-08		-31	13	-16	-13	30	-08	04	39	-08
F	33	13	19	24	11		21	30	05	-02	19	-08	-28	-10
G	27	03	27	-33	-07	-16		-25	-06	-14	24	08	53	11
H	44	01	48	-30	24	11	20		19	40	-26	06	13	-24
I	32	18	12	-17	-29	-07	48	-10		35	18	-19	00	-46
J	-29	-05	-19	11	-10	-10	-26	-28	-25		-09	50	19	-21
O	-40	-01	-52	17	-20	-07	-08	-44	14	26		-13	-17	-01
Q_2	-39	-04	-35	07	-14	-17	-18	-30	-31	29	20		17	-38
Q_3	29	-01	41	-58	05	-19	24	29	14	-15	-27	04		00
Q_4	-49	02	-60	30	-10	-05	-43	-50	-23	15	42	30	-39	

Table 5

Means and Standard Deviations of Raw Score HSPQ Factors on Puerto Rican Data*

Factor	Means			Standard Deviations		
	Males	Females	Total	Males	Females	Total
A Sociability	9.83	10.85	10.43	2.97	3.02	3.01
B Intelligence	6.87	7.46	7.22	2.04	1.69	1.87
C Ego Strength	11.91	11.10	11.44	2.64	2.62	2.66
D Excitability	9.27	8.72	8.94	3.16	3.37	3.30
E Dominance	8.84	6.16	7.26	2.73	2.57	2.95
F Enthusiasm	8.97	7.89	8.32	2.90	3.13	3.08
G Conscientiousness	10.91	11.97	11.54	3.00	2.97	3.02
H Thick-Skinnedness	10.30	8.73	9.38	3.20	3.51	3.48
I Esthetic Sensitivity	9.33	14.74	12.50	3.20	2.81	3.99
J Individualistic	9.65	9.01	9.27	2.74	2.95	2.89
O Guilt-Proneness	8.48	8.56	8.53	2.83	2.84	2.83
Q_2 Self-Sufficiency	11.64	10.27	10.83	2.80	2.92	2.95
Q_3 Willpower	11.36	11.94	11.70	2.85	2.91	2.90
Q_4 Tension	9.85	10.85	10.43	2.99	3.23	3.17

* The number of cases varies somewhat from Factor to Factor, for the Males the range is from 1,880 to 1,971. For Females the range is from 2,695 to 2,795. These variations are due to students omitting questions in the instrument, and hence getting a missing score for the Factor.

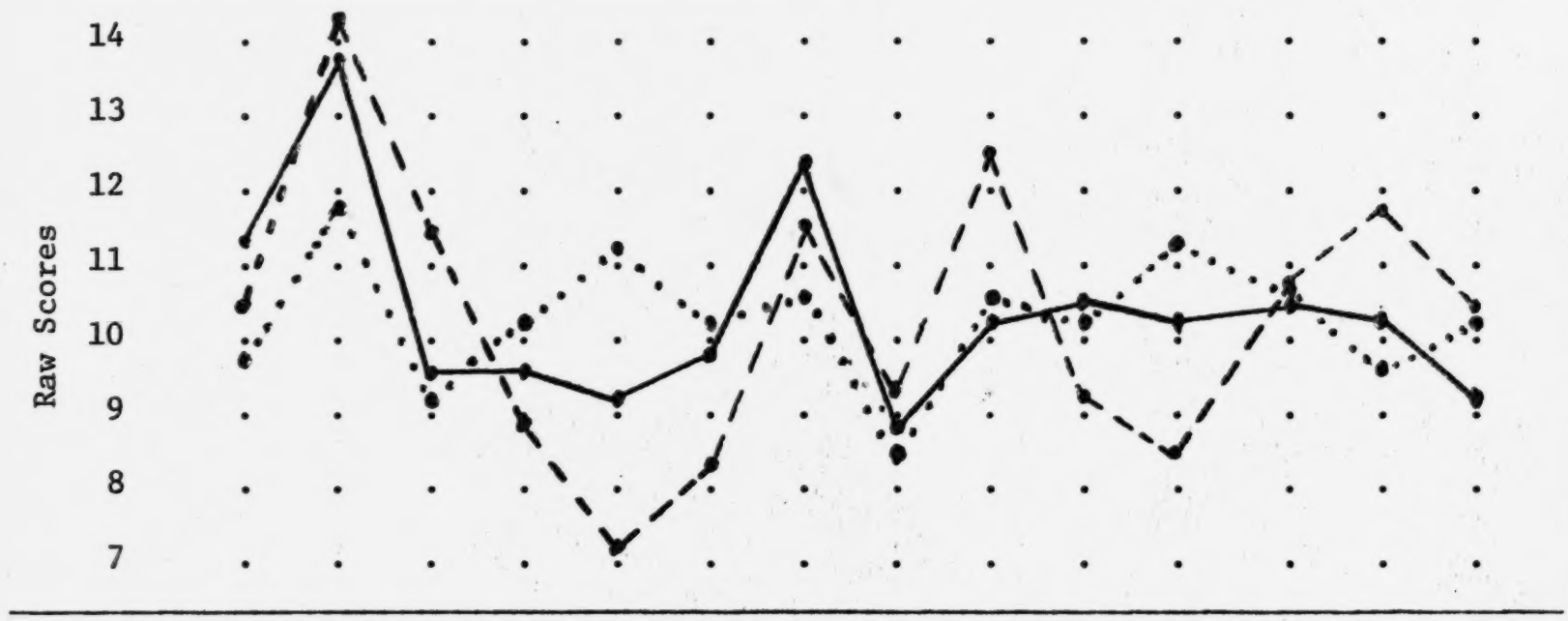

FIGURE 2: A Cross-Cultural Comparison of Norms: American, British, and Puerto Rican*

* Puerto Rican Means plotted from Table 5; British and American means as reported in HSPQ Handbook (1969), p.64.

results for American and British on combined Form A and Form B. In general the results indicate that the Puerto Ricans are more similar to the Americans than they are to the British. These raw score means indicate that the Puerto Rican students are less Excitable (Factor D), less Dominant (E), less Enthusiastic (F), more Esthetically Sensitive (I), less Individualistic (J), less Guilt-Prone (O), and are higher on Will-Power (Q_3) than the Americans or the British.

The differences in raw score means by sex and grade level on the scored HSPQ factors for the Puerto Rican data have been treated extensively in another report (Nuttall, 1969).

Discussion

This report has dealt with the personality structure of Puerto Rican junior and senior high school students examined in one school district in Puerto Rico. The instrument used was a translated and adapted form of the HSPQ, Form A.

From a scree test, more than 14 factors, probably 16 factors exist in this data. Rotating 14 factors to an oblique promax solution allows four HSPQ Factors (B, D, H, and I) to be matched to promax factors. Using a factor mandate it was possible to rotate to a moderately good fit of the 14 HSPQ factors. In only one case (Factor O) was the Coefficient of Congruence higher off the major diagonal than on it. Factors B, Intelligence and I, Esthetic Sensitivity were especially well matched.

However, when the correlations among these oblique factors were examined, essentially no similarity appeared between the Puerto Rican data and the factor intercorrelations appearing in the HSPQ Handbook.

Examination of the mean raw scores for the Puerto Rican students as contrasted to the Handbook reports for American and British students indicates that the Puerto Ricans are more like the Americans than like the British, and are generally less Excitable, less Dominant, less Enthusiastic, more Esthetically Sensitive, less Individualistic, less Guilt-Prone, and have greater Will-power than either the American or the British samples.

On the whole then it can be concluded that the HSPQ can be used in its Puerto Rican version, but that the norms and validities found for American data will have to be revalidated in the Puerto Rican culture.

The personality structure, as indicated by the intercorrelations among the oblique factors is very different in the two cultures. The observed differences in the mean scores seem to the authors to be reasonable in view of our expectations of the cultural differences, with the exception of Factor O, Guilt-Proneness. We would have expected the Puerto Rican students to be higher rather than lower than American continentals on this scale. This may be a true difference, or given the lack of factor matching of this factor, may be due to differences in the scale or the differences in the personality structure.

The most interesting findings are the quite different factor structure as indicated by the intercorrelations among the factors. Further research on the nature of these differences may be quite valuable in understanding the dynamics of culture and its impact on personality.

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Copies of this report, or more comprehensive reports of this research, may be obtained by writing to either:

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Appendix 1: Loadings of Variables on Factors after Varimax Solution had been Rotated to the Oblique Structure Using the Hypothesis Matrix.

Factor loadings for all items in Factor A, across all factors

	A	B	C	D	E	F	G	H	I	J	O	Q_2	Q_3	Q_4
Item 2	36	-10	12	01	-27	-20	-04	-04	-10	-64	-19	-55	02	24
Item 42	44	-05	05	-70	13	11	12	-25	00	-44	-09	-29	00	-22
Item 82	37	-13	21	-10	29	21	-05	37	-19	-12	-18	-16	02	-22
Item 102	74	-36	-04	-29	-06	20	17	-03	-04	-55	-06	-46	-07	-08
Item 122	34	11	03	-02	16	47	-29	-03	-05	-23	-17	-41	-29	-03
Item 3	-29	-02	15	-07	12	-17	-25	-14	-16	06	13	16	-22	-09
Item 22	-31	02	02	-10	24	-25	-37	-22	-48	04	-17	42	01	-05
Item 62	-51	16	-21	06	03	-09	04	-21	-35	01	38	48	-07	-04
Item 103	-59	16	-08	15	05	-29	-04	-42	-10	26	19	45	-10	12
Item 123	-44	15	22	18	30	04	29	-07	-50	23	00	45	-05	18

Factor loadings for all items in Factor B, across all factors

Item 23	-24	68	14	-06	-05	-08	-10	09	-08	-08	-40	08	01	04
Item 24	-25	73	03	-10	-09	07	-12	13	08	01	-23	-07	02	08
Item 43	-21	71	11	-08	02	01	-04	06	00	-08	-32	01	05	00
Item 44	-15	61	05	-04	-16	01	01	08	20	00	-36	14	02	-13
Item 63	-28	22	43	02	-35	-13	-43	38	02	14	-22	-07	-38	14
Item 64	-26	69	10	-01	-23	-04	-13	15	09	-01	-39	09	-04	01
Item 83	-05	50	-12	-08	-08	12	12	01	10	-07	-22	08	13	-04
Item 84	-07	53	-10	03	-04	-08	-04	01	14	-07	-20	05	00	-13
Item 104	-01	48	-20	-11	-10	29	02	-01	13	-13	-11	03	05	-10
Item 124	-22	65	-02	02	-11	21	06	19	07	04	-13	06	05	-14

Factor loadings for all items in Factor C, across all factors

Item 4	-09	12	57	00	27	-12	-13	39	-15	-07	-28	03	03	-36
Item 6	-02	09	66	-29	35	-10	12	48	-07	28	-66	06	52	-07
Item 26	-10	15	26	-22	27	01	-09	06	-43	-09	-20	36	-23	-32
Item 65	-03	05	53	-16	21	-10	02	37	01	04	-27	-11	26	-14
Item 105	09	-12	40	-09	34	07	06	17	-16	-15	-02	-11	04	-23
Item 5	09	08	-58	59	-03	10	24	-34	15	-27	67	-22	-16	11
Item 25	-16	22	-56	21	-18	07	-40	-19	09	-07	55	-13	-35	10
Item 45	10	-09	-53	23	09	27	-31	-08	20	36	52	-01	-48	03
Item 85	-17	-21	-37	24	01	08	-08	-24	03	35	51	24	-31	19
Item 125	-21	09	-35	17	-25	-18	-30	-38	-03	00	27	-01	-39	33

Appendix 1: (Continued)

Factor loadings for all items in Factor D, across all factors

	A	B	C	D	E	F	G	H	I	J	O	Q_2	Q_3	Q_4
Item 7	-27	43	-12	52	-11	-30	-05	-10	10	-12	14	-09	-09	28
Item 46	-16	-07	-32	70	11	27	01	-07	06	33	50	-03	-23	27
Item 66	-19	03	-07	71	34	06	-19	05	-17	30	22	-04	-16	33
Item 86	-04	-01	-33	61	07	18	-01	-22	-10	16	27	-09	-22	53
Item 106	-37	25	-18	66	-16	03	01	-08	-15	11	21	07	-22	53
Item 27	-02	25	40	-57	-14	-30	-04	16	-02	-25	-41	04	09	-26
Item 47	06	24	31	-29	05	-17	35	-13	12	-15	-49	-06	42	07
Item 67	12	27	30	-36	05	-05	09	11	07	-16	-41	-17	26	01
Item 87	03	-04	04	-10	-05	-17	-01	-06	01	-07	-04	-02	00	00
Item 126	02	14	24	-56	-07	-21	01	-07	-09	-16	-47	24	13	-22

Factor loadings for all items in Factor E, across all factors

Item 8	03	-20	15	42	26	21	-03	34	-20	10	10	-03	01	-05
Item 28	-09	11	45	10	54	22	-07	-01	-12	24	-35	01	04	-01
Item 68	-15	-13	16	-01	39	05	-07	-05	-35	04	20	13	-12	-04
Item 107	36	-11	49	-33	25	09	06	32	-02	-16	-44	-23	26	-26
Item 127	-24	21	-02	16	37	31	24	12	-48	17	07	37	01	-02
Item 9	32	12	-42	24	-28	30	-08	-17	03	-57	24	-58	-18	26
Item 48	-46	04	24	-11	-35	-22	18	06	13	29	-10	33	25	12
Item 88	25	14	-07	-01	-53	33	-09	-01	52	-02	-05	-32	-51	06
Item 108	16	10	-35	-07	-56	04	20	00	57	-02	07	-07	04	-07
Item 128	15	17	-16	-16	-47	-02	12	04	25	-09	-22	-08	09	12

Factor loadings for all items in Factor F, across all factors

Item 29	27	06	-08	-03	33	46	-07	16	-17	09	-06	00	-20	-11
Item 69	-02	25	04	10	00	64	-13	17	09	-04	20	-24	-34	-09
Item 89	09	24	-10	02	18	72	-01	24	-17	10	05	-01	-22	-06
Item 109	29	17	-10	39	-14	56	-28	51	06	-08	16	-59	-40	21
Item 129	-02	-15	-08	31	21	34	-21	22	-08	20	39	-13	-24	01
Item 10	03	-10	02	-13	-35	-43	24	00	02	-19	-04	-01	18	16
Item 30	-03	17	-16	-25	06	-36	-35	-21	15	-06	11	-15	-07	04
Item 49	-44	23	27	15	11	-40	36	06	04	38	-20	37	38	13
Item 50	-47	14	07	-16	17	-32	13	-36	13	26	03	52	16	-27
Item 70	-25	-12	22	-19	11	-42	-02	-07	-08	04	02	15	22	-02

Appendix 1: (Continued)

Factor loadings for all items in Factor G, across all factors

	A	B	C	D	E	F	G	H	I	J	O	Q_2	Q_3	Q_4
Item 71	-11	36	01	-02	-27	-15	07	14	09	05	-35	-18	14	05
Item 90	01	-04	26	-06	07	-24	65	01	35	08	-15	00	60	-09
Item 110	-04	-05	-02	-18	-07	-29	50	-09	33	12	00	17	47	-09
Item 111	35	-10	21	-57	-01	-05	21	-02	05	-39	-18	-22	18	-21
Item 130	01	16	-04	08	-07	18	55	13	-04	07	-13	17	29	15
Item 11	-02	27	08	06	-10	09	-67	08	-04	-09	-03	-40	-62	11
Item 31	00	21	-29	-01	-08	19	-51	-10	-07	11	-03	15	-52	02
Item 51	02	32	-02	-31	26	-10	-40	-23	04	-06	-11	-15	-17	-09
Item 91	-03	-08	-26	06	-06	10	-52	-08	-20	19	16	20	-63	05
Item 131	-06	06	-20	24	-12	30	-30	32	02	03	45	-21	-29	00

Factor loadings for all items in Factor H, across all factors

Item 12	37	06	39	13	23	03	-14	39	02	-20	-32	-41	-07	-14
Item 52	01	09	39	-19	25	-04	-04	22	-40	-29	-25	10	00	-38
Item 92	12	11	17	16	10	31	49	51	04	08	-08	-13	40	08
Item 112	11	18	43	07	04	07	07	47	-19	-24	-38	-24	17	-07
Item 132	10	18	27	-09	07	29	10	60	12	14	-29	01	25	-30
Item 32	-06	-08	-49	18	02	-23	02	-67	02	-17	48	02	-20	10
Item 72	-13	15	-51	21	-14	-11	-02	-55	07	-17	38	-01	-16	22
Item 93	-07	-05	-35	-04	-07	-32	02	-69	-13	-26	19	04	-10	21
Item 113	-33	-06	-23	-05	-07	-25	06	-40	19	32	37	-36	-19	-01
Item 133	02	-08	-31	33	-01	-35	24	-45	04	-11	25	-07	05	42

Factor loadings for all items in factor I, across all factors (including Sex)

Sex	21	06	-20	-11	-32	-12	-04	-07	74	09	-01	-34	11	-01
Item 13	-03	13	03	-33	-44	-26	21	09	14	-30	-11	12	20	-24
Item 34	19	08	-20	-07	-36	-06	02	00	80	08	01	-28	14	-13
Item 54	25	19	-03	-10	-45	24	-03	-05	59	00	-08	-36	-40	09
Item 74	02	22	-22	02	-41	-08	04	11	66	15	-01	-11	15	-11
Item 94	23	09	-20	-08	-45	02	13	-01	73	05	-06	-18	07	-13
Item 33	08	-12	33	-28	22	12	-07	18	-33	-05	-31	34	-07	-46
Item 53	-12	10	08	-20	09	-05	-44	12	-34	01	-18	06	-06	02
Item 73	-15	01	19	07	27	19	-12	02	-86	-19	-06	14	-19	24
Item 114	-31	07	18	11	30	00	-07	10	-83	-05	-04	33	-09	16
Item 134	27	12	28	14	25	13	-14	32	-54	01	-16	42	-09	-29

Appendix 1: (Continued)

Factor loadings for all items in Factor J, across all factors

	A	B	C	D	E	F	G	H	I	J	O	Q_2	Q_3	Q_4
Item 14	-36	-02	-12	67	21	-09	04	-05	15	45	32	23	05	13
Item 35	-13	-15	10	48	52	-06	-14	00	-06	46	02	01	09	27
Item 75	-57	04	-03	-11	07	-08	01	-30	-03	41	27	59	-16	-15
Item 115	-42	-09	10	-02	-27	-34	10	-13	-02	25	-01	44	04	11
Item 135	-37	-15	19	03	08	-15	06	18	-17	40	18	29	03	11
Item 15	23	08	21	-33	31	-25	-03	-10	06	-34	-05	-40	10	-09
Item 55	37	-09	-11	09	-47	35	19	22	-28	-60	-07	-31	-01	18
Item 95	18	-15	-09	-14	-04	-47	-03	-37	13	-36	08	-15	03	-06
Item 116	05	01	57	-28	17	04	03	15	-36	-42	-31	-29	22	01
Item 136	22	-01	08	-16	-24	-23	12	-09	04	-26	-30	-19	07	13

Factor loadings for all items in Factor O, across all factors

Item 16	-16	-16	-21	71	13	-26	04	-21	00	25	28	12	-07	36
Item 56	-02	10	-47	01	-19	35	-26	-08	-05	-06	49	-01	-48	07
Item 76	07	-33	04	01	18	22	13	03	-07	-03	37	-14	00	-05
Item 96	-24	-11	-23	19	-04	-04	-09	-12	15	10	53	04	-07	-02
Item 117	11	01	-36	-05	00	-20	15	-56	01	-25	25	-13	-07	23
Item 36	16	-06	68	-16	37	-16	11	26	-01	-06	-51	-13	32	-20
Item 57	31	09	48	-28	06	-07	30	18	01	-28	-59	-29	40	09
Item 77	-25	16	01	-42	-01	-02	-15	-07	-13	12	-08	42	-05	-21
Item 97	23	19	-11	-22	-25	04	24	-04	10	-32	-17	-18	21	15
Item 137	05	03	37	-08	12	-16	11	27	-15	-21	-21	-02	16	-28

Factor loadings for all items in Factor Q_2, across all factors

Item 17	-46	09	17	-17	-10	-30	14	08	-13	22	-23	61	43	-04
Item 37	-51	02	03	01	01	-24	-27	-24	-24	31	08	45	-26	06
Item 58	-30	17	08	-21	-10	-34	32	-10	14	21	-13	40	26	-04
Item 98	-06	-01	17	-07	28	29	-04	21	-52	06	-13	42	-16	-27
Item 138	-46	-02	10	02	-04	-29	46	07	13	43	00	58	51	-07
Item 18	49	03	25	-05	02	17	06	31	-16	-38	-46	-55	22	31
Item 38	56	-02	03	25	02	13	-11	40	00	-30	-21	-59	02	19
Item 78	22	11	-07	-02	-47	33	-11	00	61	03	10	-42	-51	06
Item 118	30	-17	-03	-28	-07	02	12	01	09	-31	09	-29	15	-10
Item 139	32	07	00	-13	-36	04	10	11	55	-28	-04	-57	18	05

Appendix 1: (Continued)

Factor loadings for all items in Factor Q_3, across all factors

	A	B	C	D	E	F	G	H	I	J	O	Q_2	Q_3	Q_4
Item 19	-19	03	-06	00	37	-28	37	04	-26	00	06	18	75	03
Item 59	-04	-02	14	-46	-11	-37	-14	12	-13	-11	-19	-06	31	15
Item 80	05	-08	35	-17	23	-48	29	-14	12	-08	-22	-05	37	-03
Item 100	-07	-08	01	-09	-13	-27	59	04	37	11	03	21	57	-17
Item 120	15	03	48	-21	31	14	11	35	05	-06	-28	-08	22	-37
Item 34	-03	07	-33	22	19	15	-38	-02	07	05	60	-24	-42	-04
Item 79	02	-19	-05	41	26	32	-17	03	-15	25	24	-16	-28	31
Item 99	-06	-01	-05	-29	-05	-33	-36	-49	-12	-09	-13	15	-33	04
Item 119	-07	-16	-50	13	-23	13	-20	-15	-07	-04	64	06	-42	10
Item 140	-06	21	-35	24	09	20	-48	06	-07	-03	51	-24	-50	06

Factor loadings for all items in Factor Q_4, across all factors

Item 20	01	-18	-37	-03	-19	-23	-24	-27	09	18	26	12	-33	24
Item 40	02	-21	-32	21	-18	08	-08	-24	15	15	37	-28	-18	48
Item 60	10	-15	-50	15	-21	-01	22	-55	00	-16	35	-23	-01	65
Item 81	-13	-06	-25	50	09	29	04	-21	00	14	24	03	-16	54
Item 121	-08	-14	-16	55	21	32	-05	-05	-10	14	44	-09	-25	15
Item 21	-39	-04	-05	-08	04	-03	-05	-15	06	24	27	38	06	-25
Item 41	17	-20	23	-59	-07	-16	33	-06	10	-18	-16	12	23	-30
Item 61	42	-23	07	-59	14	36	-08	04	-01	-05	-11	-21	-07	-22
Item 101	16	-17	31	-25	38	11	02	19	-14	06	-17	16	03	-38
Item 141	09	14	37	-11	28	25	-06	46	01	04	-25	07	01	-54

Factor loadings on the variable Grade Level, across all factors

Gr. Level	02	20	-05	-31	-30	13	-07	-02	-15	-15	-45	20	14	08